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IS 13307 (1992): Resin finished shoe uppers from goat and sheep skins [CHD 17: Leather, Tanning Materials and Allied Products]

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Indian Standard

RESIN FINISHED SHOE UPPERS FROM GOAT AND SHEEP SKINS — SPECIFICATION

UDC 675.061.2/.3 : 675·043·82 : 665·94 : 685·372·14

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

March 1992

Price Group 3

Leather Sectional Committee, CHD 017

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Leather Sectional Committee had been approved by the Chemical Division Council.

Resin finished leathers from goat and sheep skins form the bulk of leather exports from India. Resin finishes, having the inherent capacity to cover grain damages, thereby helping to fetch better unit value realization to the tanner, is widely adopted by leather industry for finishing of leathers.

This standard covers the aniline and semi-aniline varieties of resin finished upper leather.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

RESIN FINISHED SHOE UPPERS FROM GOAT AND SHEEP SKINS — SPECIFICATION

1 SCOPE

1.1 This standard prescribes the requirements and methods of sampling and test for resin finished shoe uppers from goat and sheep skins.

1.2 This standard covers the aniline and semi-aniline varieties of resin finished leathers.

2 REFERENCES

The Indian Standards listed below are necessary adjuncts to this standard:

IS No.	*Title*
582 : 1970	Methods of chemical testing of leather (*first revision*)
1640 : 1960	Glossary of terms relating to hides, skins and leather
5868 : 1983	Methods of sampling for leather (*first revision*)
5914 : 1970	Methods of physical testing of leather
6191 : 1971	Methods of micro-biological, colour fastness and microscopical tests for leather

3 TERMINOLOGY

For the purpose of this standard, definitions given in IS 1640 : 1960 shall apply.

4 TYPES

4.1 There shall be following two types of the material:

Type 1 — Full chrome tanned resin uppers, and

Type 2 — Semi-chrome tanned resin uppers.

4.1.1 The material of *Type 1* shall be further divided into following two grades:

Grade 1 — Full chrome sheep skin, and

Grade 2 — Full chrome goat skin.

4.1.2 The material of *Type 2* shall be further divided into following two grades:

Grade 1 — Semi-chrome sheep skin, and

Grade 2 — Semi-chrome goat skin.

5 REQUIREMENTS

5.1 Raw Materials

The material shall be wet salted/green goat or sheep skins of good substance. The skins shall be free from grain and flesh defects as far as possible.

5.2 Tanning

The material shall be tanned by either chrome tanning process or by combination tanning process of vegetable and chrome tanning or combination tanning process of chrome and vegetable/synthetic tanning materials.

5.2.1 *Fungicidal Additives*

At the end of tanning operation and before drying, suitable fungicides shall be incorporated in requisite proportions. Fungicides used to promote mildew resistance in leather shall be effective and non-toxic. The material shall show no growth of mildew when examined visually after the completion of the test prescribed in LB : 2 of IS 6191 : 1971.

5.3 Post Tanning

The material shall be shaved such that the final finished leather is in accordance with the thickness (±0·1 mm) as agreed to between the purchaser and the supplier. The leather shall be drum dyed and fatliquored. The dried crust shall be set, staked and buffed (to produce a clean flesh side).

5.4 Finish

The leather shall be resin finished and plated/embossed and/or ironed/polished.

5.5 Acetone Fastness Test

The upper shall show no sign of swelling, softening and smearing when tested in accordance with the method prescribed in Annex A.

5.6 Colour Fastness to Heat

The upper shall show a contrast grading 2 after 5 seconds under pressure of 0·21 kg per cm^2 at 100°C when tested in accordance with the method prescribed in LF : 5 of IS 6191 : 1971.

5.7 The upper shall conform to the chemical requirements given in Table 1 when tested in accordance with the relevant methods of test referred to in col 6 of the table.

5.8 The uppers shall also conform to the physical requirements given in Table 2 when tested in accordance with the relevant methods of test referred to in col 4 and 5 of the table.

5.9 Optional Requirement

The uppers shall show cold crack temperature as $-40°C$ *Min* when tested according to the method prescribed in Annex B.

6 MARKING

6.1 The leather shall be legibly marked on the flesh side of each piece with the area in square decimetres.

NOTE — The marking should not cause any disfiguration of the leather or migrate itself to the grain surface of the leather coming in contact with it.

Table 1 Chemical Requirements for Resin Finished Shoe Uppers from Goat and Sheep Skins

(*Clause* 5.7)

Sl No.	Characteristic	Requirement		Method of Test, Ref to Cl No. of IS 582 : 1970
		Type 1	Type 2	
(1)	(2)	(3)	(4)	(5)
i)	Total ash, percent by mass, *Max*, (over Cr_2O_3 content)	2·5	2·5	LC : 3
ii)	Solvent extractable substance, percent by mass	2·5 to 7·5	2·5 to 7·5	LC : 4
iii)	Chromium (as Cr_2O_3), percent by mass, *Min*	3·0	2·0	LC : 10
iv)	Water soluble matter, percent by mass, *Max*	1·0	4·0	LC : 6
v)	*p*H of water solubles, *Min*	3·5	3·5	LC : 18
vi)	Differential number, *Max*	0·7	0·7	LC : 18

NOTE — Calculation of requirements (i) to (iv) are based on zero percent moisture content.

Table 2 Physical Requirements for Resin Finished Shoe Uppers from Goat and Sheep Skins

(*Clause* 5.8)

Sl No.	Characteristic	Requirement				Method of Test, Ref to Cl No. in		
		Type 1		Type 2				
		Gr 1	Gr 2	Gr 1	Gr 2	IS 576 : 1989	IS 5914 : 1970	IS 6191 : 1971
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
i)	Tensile strength, kg/cm^2, *Min*	160·0	200·0	150·0	180·0	—	LP : 6	—
ii)	Elongation at break, percent	35-75	40-75	35-75	40-75	—	LP : 6	—
iii)	Tongue tear strength, kg/cm thickness, *Min*	20·0	25·0	15·0	20·0	—	LP : 9	—
iv)	Stitch tear strength, kg/cm thickness, *Min*	80·0	100·0	70·0	80·0	—	LP : 8	—
v)	Flexing endurance (Bally), (without cracking at grain), *Min*	50 000	50 000	50 000	50 000	—	LP : 19	—
vi)	Distension at grain	7	7	7	7	Annex A	—	—
vii)	Colour fastness to rubbing contrast grading after 1 024 revolutions, *Min*:							LF : 9
	a) Wet rubbing	3	3	3	3			
	b) Dry rubbing	4	4	4	4			

6.1.1 The leather pieces may also be marked with the Standard Mark.

7 PACKING

7.1 The leather shall be packed as agreed to between the purchaser and the supplier.

7.2 The packages shall be marked with the name of the manufacturer; recognized trademark, if any; number of pieces of leather; total area; and month and year of manufacture.

8 SAMPLING AND CRITERIA FOR CONFORMITY

The scale of sampling and criteria for conformity of the material shall be as prescribed in IS 5868 : 1983.

ANNEX A

(*Clause* 5.6)

METHOD OF TEST FOR ACETONE FASTNESS

A-1 PROCEDURE

A-1.1 Drop 1 ml of acetone on the unfinished side of the leather test piece within 30 seconds. Let the test piece lie with the finished side up for 2 minutes at room temperature and then rub five revolutions on the SATRA rub fastness tester under a load of 2·5 kg.

A-1.2 Examine the finished coat for swelling, softening or smearing.

ANNEX B

(*Clause* 5.9)

METHOD FOR DETERMINATION OF THE COLD CRACK TEMPERATURE

B-1 PRINCIPLE

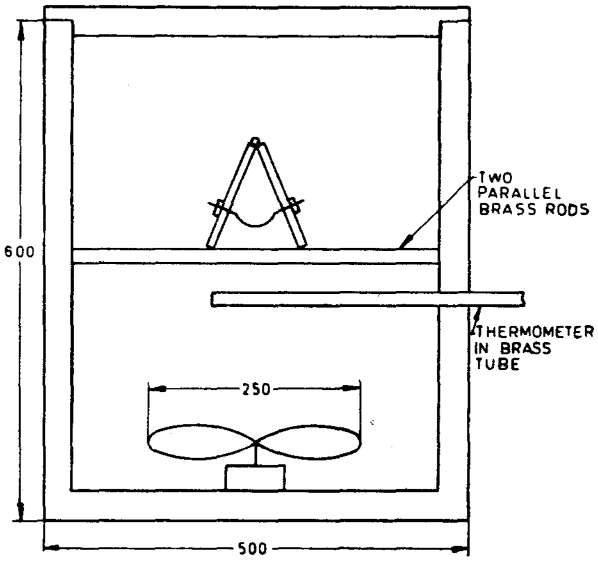
A strip of leather is held between two pieces of wood forming a hinged apparatus. The leather is cooled and then creased, grain outwards.

B-2 APPARATUS

B-2.1 Refrigerated Cabinet (*see* **Fig. 1**)

The dimensions of the cabinet are not critical but approximately 500 mm × 300 mm × 600 mm has been found suitable. It is essential that the cabinet has forced air circulation.

NOTE — In Fig. 1 this is provided by a fan set in the bottom of the cabinet. Cooling can be provided either by solid carbon dioxide placed in triangular trays in the corners of the cabinet or by an independent cooling unit so that air is forced in near the base of the cabinet and exhausted near the top. Temperature is controlled in the first case by intermittent manual switching of the fan to maintain the required temperature. In the latter case a thermostat can be incorporated in the affluent air stream and set to the required temperature.



All dimensions in millimetres.

FIG. 1 REFRIGERATED CABINET

If a deep freeze cabinet is used then it is again essential to incorporate a fan for air movement over the specimens and a thermostat to maintain the required temperature.

B-2.2 Hinged Apparatus for Mounting Test Pieces

Hinged apparatus for mounting the test pieces (*see* Fig. 2A) with holes of 5 mm diameter set 40 mm in from the free edge. These are countersunk on the inside so that the fixing screws for the samples fit flush with the surface and the apparatus can be closed flat. The position of the samples in the open position is shown in Fig. 2B and in the closed position in Fig. 2C. This enables the cracks (if any) to be examined. The hinged apparatus is placed on two parallel brass rods 125 mm apart as shown in Fig. 1. Between the brass rods, at the same level, a thermometer is placed in a brass tube for safety. This can be read externally.

B-3 TEST PIECES

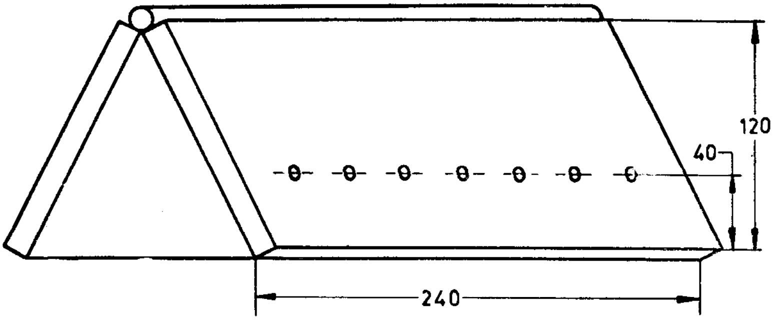
Test pieces of leather which measure 90 mm × 12·5 mm with a 5 mm hole punched 5 mm from each end of the sample are taken for testing.

B-4 PROCEDURE

B-4.1 Cut ten test pieces of the leather, one to be tested at each temperature from +5°C to −40°C at 5°C intervals.

B-4.2 Fix the test pieces in the hinged apparatus. If more than one leather is to be tested at the same time in the hinged apparatus ensure that all leathers are of approximately the same thickness. Thicker test pieces will prevent the thinner ones from being folded flat.

B-4.3 With the hinged apparatus in the open position, place it on the brass rods with the open part facing downwards (*see* Fig. 2B).



All dimensions in millimetres.

FIG. 2A HINGED APPARATUS FOR MOUNTING TEST PIECES

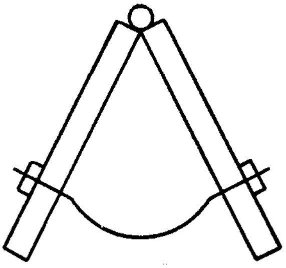


FIG. 2B OPEN POSITION

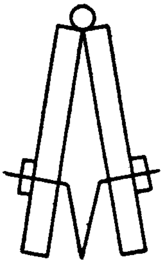


FIG. 2C CLOSED POSITION

Close the refrigerated cabinet and run until the temperature is +5°C. Maintain this temperature for 5 minutes. Then open the cabinet and snap shut the hinged apparatus by hand inside the cabinet. Remove the apparatus from the cabinet and examine the test pieces for cracks. If the test piece has not cracked replace it by a further test piece and replace the apparatus in the cabinet. Lower the temperature to 0°C and maintain for 5 min before once more snapping shut. Repeat the test at −5°C, −10°C, −15°C, −20°C, −25°C, −30°C, −35°C and −40°C or until the finish shows cracks.

B-5 EXPRESSION OF RESULTS

Record the highest temperature at which the finish cracks and report it as the cold crack temperature.

NOTE — Some finishes do not show straight line cracks. Some show small fine cracks and examination with a magnifying glass may be desirable. If the specimen has very fine cracks initially, the end point may not be clear or may be missed.

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Doc : No. CHD 017 (9226)

Amendments Issued Since Publication

Amend No	Date of Issue	Text Affected

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Printed at Printwell Printers, Aligarh, India